

# CS 271 - Project 0110

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In the hash function, I first check the length of the string in order to customize how the hash function will calculate the slot for a particular string:

1. In the case that the string is of length 1, the ASCII value of that particular character is modified by the number of slots and the resulting value is the slot number the object is assigned to.
2. In the second case, the string has a length of 2, and in this case both of the letters in the string are translated into their respective ASCII codes and added together. The resulting value is multiplied by the ASCII code of the first character in the string and then modified by the number of slots.
3. In the final case, the string has a length that is greater than 2. I begin by creating separate seeds, of which are large prime numbers. Next, I first iterate through the characters in the string, and update the value of a variable by itself multiplied by the ASCII value of the character being iterated on, multiplied by the first seed, and finally modified by the second seed. This is then done again for the same string, for all characters in the string except the final one. These 2 values are then multiplied together, and divided by the string size cubed, and then modified by the number of slots to return the slot number for a string.

After placing every word in the built-in dictionary into a HashTable object, I then wrote out the size of each entry in the table to a file. Once this was complete, I then created a spreadsheet with these values and calculated the standard deviation of them. I found the standard deviation to be 9.9255, and the graph of the size of each slot is shown here:

